CHAPTER II

PROJECTING CONRAIL'S TRAFFIC

Chapter Summary. Conrail's potential for surviving as an independent railroad depends in part on the traffic it will carry since the actual tonnage hauled by Conrail will affect the company's revenues, net income, and cash flow. Using an econometric model, CBO forecast Conrail's traffic over the 10-year period 1986 through 1995. The model is designed to predict Conrail's annual tonnage for each of the 14 principal commodity groups the railroad carries. The forecast results, therefore, indicate both the total tonnage predicted for Conrail and the composition of that tonnage among the commodity groups. Under CBO's baseline macroeconomic forecast, Conrail's tonnage is predicted to rise steadily from 185 million tons in 1986 to 195 million tons in 1992, at which point it declines slightly to 192 million tons by 1995. These results are comparable to Conrail's recent traffic of 183 million tons in 1983, 192 million tons in 1984, and 181 million tons in 1985--indicating that Conrail will maintain its traffic base in future years.

Projecting Conrail's future viability requires first estimating the traffic it will carry. The transportation services supplied by Conrail are the principal determinants of its revenue, expenses, and capital requirements and, therefore, of its net income and cash flow--the key indicators of Conrail's viability. In 1985, Conrail hauled 181 million tons. Under CBO's baseline macroeconomic forecast, Conrail is projected to haul 194 million tons in 1990 and 192 million tons in 1995.

An econometric model is used to predict Conrail's traffic in the 10-year forecast period, 1986-1995. The model is based on assumptions concerning the demand for railroad transportation services in general and for Conrail's services in particular, and produces forecasts of Conrail's tons by commodity through 1995. This chapter presents the assumptions made in the traffic forecast, the model constructed to predict Conrail's traffic, and the results obtained.

ASSUMPTIONS

Two sets of assumptions were employed in projecting Conrail's traffic: those made to analyze historical traffic levels, and those needed to forecast future traffic based on that analysis. In the former category are the assumptions made to construct the individual equations in the model. The latter category includes the assumptions about the future level of macroeconomic activity that are used to forecast the model and were presented in Table 3.

In constructing the traffic model, the following general assumptions concerning railroad transportation and the demand for Conrail's services are made. The tonnage hauled by Conrail is assumed to depend on the level of output in the national economy, the level of economic activity in the Conrail region, and the degree of competition for the available traffic from other railroads or other modes of transportation. These assumptions determine the variables selected to explain Conrail's historical traffic levels.

The demand for the transportation services provided by Conrail can be characterized as a derived demand, since the transportation of raw materials, intermediate goods, and finished products is derived from the demand for those goods in the economy. As the level of real national output changes, the demand for transportation of that output will also change. Conrail's tonnage particularly depends on both the output of goods in the region it serves and the national level of economic activity. While Conrail and other railroads are competing (principally with trucks) to maintain and increase their share in the transportation of finished goods, the commodities carried by railroads are primarily inputs to or intermediate goods in the production process. Any shift in the production of output from its territory to other regions of the country, therefore, will reduce Conrail's traffic base.

Finally, competition from trucks and other railroads for the traffic available in the region will affect both Conrail's potential traffic and its rates. The ability of other modes to compete with Conrail depends on their relative cost of providing alternative transportation services: the lower the relative cost, the greater the competitive pressure on Conrail's traffic.

TRAFFIC MODEL

The traffic model is an econometric model designed to forecast the number of tons hauled by Conrail over the 1986-1995 period. The model is a system

of equations based on the 14 principal commodity groups carried by Conrail. Since each commodity group is characterized by its own market for transport services and the demand for transportation services is not uniform across these commodities, forecasts of the demand for Conrail's services and the tons hauled are made on a commodity-by-commodity basis. Each commodity group is analyzed in an individual equation, and the resulting 14 equations are summed to predict Conrail's total tonnage for each year in the forecast period.

The general form of the equation for each commodity group is similar, though each of the equations differs somewhat since the factors affecting tons hauled vary among commodities. The variables used to predict tonnage include output variables, regional production indices, relative cost indices, various seasonal and structural adjustment variables, and time trends.

The output variables are either industrial production indices or shipment indices for each commodity group. Since these output variables are commodity-specific, they reflect changes in overall economic activity as well as fluctuations in the output of Conrail's specific commodity groups. The growth rate of each output variable is scaled to the forecast growth rate of real GNP using proportions obtained from the Data Resources, Inc. (DRI) model. The resulting indices provide a measure of forecasted national output for each commodity group.

The regional production indices are designed to capture shifts in national production that affect the demand for transportation in the Conrail region. These indices are ratios of employment in the Conrail service region to employment nationwide in the industries producing the commodities Conrail carries. While the output variables indicate total demand in national transport markets, these ratios indicate the percentage of that demand arising in Conrail's markets. Estimates of the future values of these indices were taken from the DRI model.

The relative cost indices are measures of the cost competitiveness between rail transport and truck transport. These indices are ratios of rail rate indices, by commodity, to a truck cost index. Increases in these ratios indicate a rise in the price of rail transportation for a commodity relative to the cost of the trucking alternative.

Various dichotomous or "dummy" variables are used to reflect variations in the number of tons hauled resulting from seasonal factors and specific events such as coal strikes. Time trends measure the overall trends in Conrail's traffic that are not captured by variations in the other explanatory variables.

TABLE 4. PROJECTIONS OF TOTAL TONS HAULED BY CONRAIL, 1986-1995 (In millions of tons)

	Actual 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Base Case	181	185	188	190	191	194	194	195	195	193	192
Low Case	181	184	179	170	176	177	177	179	180	179	180

SOURCE: For 1985, Conrail; for 1986-1995, Congressional Budget Office.

The model is estimated using quarterly data from 1977 through 1984. The results obtained are used to forecast each equation for the 1986-1995 period. These forecasts are made using projections of the explanatory variables consistent with the macroeconomic forecast in both the base case and low case. The results are ton estimates by commodity for both cases.

FORECAST RESULTS

The forecast for Conrail's tonnage is one of steady but modest growth. Changes are predicted in both the mix of commodities and the total level of traffic. Conrail's total tonnage by year for the base case and low case is presented in Table 4 above. Tonnage by commodities is shown for both cases in Table 5. 1/

Total Tonnage

In the base case, sustained economic growth and moderate inflation combine to produce gains in traffic throughout most of the forecast period. The

1. A fifteenth commodity category, "Other," is not forecast by the model but is increased at the average rate of the 14 commodities in the base case and held constant at its 1985 level in the low case. The totals for each year are the sum of the forecast results for each equation plus the annual projections for "Other," and are shown in Table 4.

number of tons hauled each year grows steadily from 181 million tons in 1985 to 194 million tons by 1990. Tonnage remains at about 194 million to 195 million tons until 1994, when it begins a slight decline.

In the low case, the recession reduces traffic substantially. By the trough of the recession in 1988, traffic is 20 million tons below the base-case forecast. Traffic recovers partially in 1989, but grows only slightly thereafter. Total tons do not regain their 1986 prerecession level, but reach a plateau of between 179 million and 180 million tons per year in the 1992-1995 period, which is roughly equal to the 1985 level.

TABLE 5. PROJECTIONS OF TONS HAULED BY CONRAIL, BY COMMODITY, IN 1990 AND 1995 (In millions of tons)

Commodity	Actual	Base Case		Low Case	
	1985	1990	1995	1990	1995
Chemicals	16.4	18.5	19.4	16.8	18.0
Coal	59.7	66.1	68.5	63.1	66.2
Coke	4.0	3.9	4.2	3.6	4.0
Farm Products	8.2	10.5	11.5	10.5	11.5
Food Products	11.2	9.2	6.0	6.5	3.9
Lumber	4.0	3.2	2.4	2.7	1.9
Metallic Ores	6.3	7.0	7.3	5.8	6.3
Nonmetallic Minerals	9.1	7.9	6.5	6.7	5.6
Primary Metal Products	14.4	16.2	17.4	14.8	16.4
Pulp and Paper Products	10.9	9.9	8.0	8.8	7.1
Stone, Clay, and Glass Products	4.8	4.6	4.1	3.8	3.4
Trailer on Flat Car (TOFC)	11.4	13.5	15.1	12.8	14.5
Transportation Equipment	8.8	8.9	7.5	8.3	7.0
Waste and Scrap Materials	6.9	8.5	8.9	7.9	8.5
Other	5.3	5.5	5.6	5.3	5.3
Total	181.2	193.5	192.4	177.3	179.5

SOURCE: For 1985, Conrail; for 1990 and 1995, Congressional Budget Office.

NOTE: "Other" is not forecast by the model but is increased at the average rate of the 14 commodities in the base case and is held constant at its 1985 level in the low case.

Tonnage by Commodity

While the number of tons hauled grows steadily over most of the period in the base case, the mix of individual commodities varies. The change in the commodity mix over the period can be seen in Table 5, in which tons by commodity are shown at five-year intervals. Commodity groups that are primarily bulk goods--chemicals, coal, coke, farm products, metallic ores, primary metal products, trailer on flat car (TOFC), and waste and scrap materials--increase over the 10-year period and are a total of 25 million tons higher in 1995 than in 1985. Those groups that primarily include manufactured commodities--food products, lumber, nonmetallic minerals, pulp and paper, transportation equipment, and stone, clay, and glass products--decrease over the same period and are a total of 14.3 million tons below their 1985 level in 1995. In 1994 and 1995, the long-term downward trends in manufactured goods traffic begin to offset the modest but steady growth in Conrail's bulk commodity traffic and, as a result, total tons decline slightly in those years.

The same commodities that increase in the base case also increase in the low case. By 1995, this group of commodities is 18.1 million tons higher than in 1985. The group of declining commodities is 19.9 million tons below its 1985 level in 1995. The result is a slight decline in total tons by 1995 from the 1985 level. This decline reflects both the cyclical effect of the recession and the long-run trend that is apparent in the base case. In fact, three-fourths of the difference in 1995 between the low and base cases can be accounted for by an acceleration in the decline of manufactured goods traffic and a slowdown in the growth of coal, chemical, and TOFC traffic. The result is a total traffic level by the end of the forecast period that is 12 million tons less than in the base case and roughly equal to the level of traffic transported in 1985.

The results of the traffic model indicate that Conrail will carry levels of traffic commensurate with its recent experience and sufficient to use effectively its current and prospective capacity whether the baseline or low scenario occurs. The predictions of tons by commodity developed in this chapter provide the basis for projecting operating revenue, operating expenses, and net operating income in the next chapter. The financial data developed there and in Chapters IV and V are the principal measures of Conrail's potential for surviving as an independent transportation company.